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JOSEPH W. PRICE, ESQ.
SNELL & WILMER LLP
1920 MAIN STREET
SUITE 1200
IRVINE, CA 92614-7230

EXAMINER

RAMSEY, KENNETH J

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 08/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/934,095

Applicant(s)

KADO ET AL.

Examiner

Kenneth J. Ramsey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 112, 126-129 and 131-150 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 112, 126-129, 131-139, 141 and 143-150 is/are rejected.
- 7) ☒ Claim(s) 140 and 142 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

This case has been treated special in accordance with the decision dated August 30, 2002.

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claim 128 is rejected under 35 U.S.C. 102(e) as being anticipated by Inoue et al. Claim 128 is best characterized as a product-by-process claim. Therefore, it is the product that must be compared to the prior art and not the process by which it is made. Applicant has not shown the product of claim 128 to be any different from that made by the process of Inoue. Note that Inoue et al discloses a plasma display panel having a plurality of discharge spaces formed by arranging a plurality of partitions 29 to divide the inner space between front and back panels of the display, a sealing member of known sealing material 32 [i.e., glass as disclosed by the cross hatching in figure 1] , a first space (in the upper portion of figures 13 and 14) between the first ends of the partitions

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and the sealing glass layer having a first vent 31b, and a second space (in the lower portion of figures 13 and 14 of Inoue et al) between second ends of the plurality of partitions and the sealing glass member having a second vent. The method of aging as recited in claim 112 fails to distinguish the display structure as claimed from that of Inoue et al, particularly since the steps operating the discharger 44 repeatedly in the seventh embodiment, column 18, lines 47-50 and column 19, lines 47-50, prior to the final gas fill and sealing of the inlet and outlet corresponds to the intermittent process described in applicants specification and would result in the same structure whether or not the inlet may be open during the operation of discharger 44.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 112, 126, 128 and 131-136 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al (6,236,159) in view of Ahearn et al, "Effect of reactive gas dopants on the MgO surface in AC plasma display panels," IBM J. Res. Dev., Vol. 22, No. 6, November 1978, pp. 622-625 and Carretti et al, 6,472,819. Inoue, figures 10, 22, and column 18, line 23 through column 19, line 65, discloses a process of purging a plasma display panel impurities including introducing a first discharge gas 39 (cleaning gas) through a first vent opening, 31a, and exhausting the discharge gas through a second opening 31b. Barriers 27b are read as part of the barrier ribs (partitions) 29 and

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are closely spaced to the sealant to cause the gas to flow between the partitions 29 in a uniform manner. Inoue further includes the step of discharging electrodes within the display panel by a discharger 44 to aid in the removal of impurities from the electrodes and thus stabilized the luminous intensity and discharge characteristics (aging the electrodes). After repeated gas flushing and evacuation of the display, a second gas (discharge gas) 41 is introduced and the display is sealed. The same gas may be used for cleaning gas 39 and discharge gas 41 (Inoue, column 18, lines 54-56). Also, Inoue column 19, lines 4-6 and 47-50, teaches that the step of discharging the gas panel may be repeated intermittently as required by claim 131, lines 16-17. Thus Inoue differs from the invention of claim 131 at most by the purity of the first discharge gas 39.

However, since the process is intended to remove impurity or active gases from the display panel (column 19, line 65 through column 20, line 3, it would not make sense to purposely introduce an impurity gas into the display panel that is known to shorten the life of a display panel, i.e. active gases such as water vapor at 15 torr. [Since applicant has argued that water vapor at a partial pressure of 15 torr is not disclosed by Inoue to be a harmful contaminant, the examiner herein cites Ahearn et al to support his notice that traces of water vapor was a well-known contaminant in plasma display panels]. As discussed in Carretti et al, column 2, lines 14-47, Ahearn et al taught that trace amounts of water vapor was a contaminant of plasma display panels which must be removed to result in stable operation of the display. Thus to use a dry, high purity inert gas in the process of Inoue would have been obvious to one of ordinary skill in the art. As to claims 112 and 132, which further recites that the gas introduction is between the

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periods of operating the discharger 44, it is the position of the examiner that while discharger 46 is necessarily operated at the time of the introduction of the gas 39, since the discharger 44 operates the display, it would make no sense to operate the discharger 44 until the gas pressure in the display was at the approximate pressure for which the display was designed to operate. Further, it would have been obvious to close the valve from the gas supply when such a pressure was reached to prevent overcharging the gas. Thus it would have been obvious to one of ordinary skill in the art at the time of applicants' invention to introduce and exhaust the discharge gas between the times of operating the discharger 44. As to claims 135 and 136, column 18, lines 54-56, disclose the use of nitrogen, neon, helium or argon as the discharge gas. As to claim 141, the vents are located as claimed.

Claims 127, 129, 137-139, 141 and 143-150 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue, Carretti et al and Ahearn et al as applied to claims 112, 131, 132 above, and further in view of Wilson. As to claims 127, 137 and 143, Inoue discloses a first vent, 31a, a second vent, 31b, a plurality of discharge spaces formed by partitions 29, a sealant, 32, a first space between the sealant and ends of the partitions associated with vent 31a, a second space between the sealant and the ends of the partitions associated with vent 31b; it is clear that the discharge gas is circulated through the display intermittently by introducing the gas into the display through vent 31a and thereafter exhausting the gas through vent 31b a plurality of times. Inoue fails to disclose the sealant as being formed of glass or a barrier spaced adjacent the sealant which prevents the sealant from inwardly invading the discharge space. Wilson

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discloses that the sealant may be a low melting glass and that the low melting glass has a tendency to flow when molten. It was further shown by Wilson, figure 3 and column 2, lines 4-9, that the spacers 8, 8a, of a plasma display device form barriers to the inward flow of the glass sealant in order to protect the display portion from the molten glass. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention to form the sealant of Inoue from glass and provide barriers to the inward flow of molten glass since an inexpensive and well-known sealant may then be used without requiring a larger clearance between the sealant and the display area. As to claim 138, the gas flows mainly through the gas passages between the partitions leading from the first space to the second space. As to claim 139, the barriers 27b are read as part of partitions and the space between such partitions and the sealant is narrower at the portion 27b of the outermost partitions than at the ends of portions 29 of the partitions.

5. Claims 112, 126, 128 and 131-136 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al (5,564,958) in view of MacNair and Ahearn et al. Itoh et al, column 6, line 64 through column 7, line 34 discloses a process of flushing a display device with a hydrogen gas at 350 °C and alternating the flushing with as many as 8 periods of conducting a gas discharge of [feeding electricity to the electrodes] the display to facilitate "gas cleaning". Those of ordinary skill in the art familiar with term "gas cleaning" would recognized that the same is a process wherein an electric discharge is produced which ionizes gas molecules in the display device so that ions bombard the cathode and knock loose gaseous impurities therefrom while at the same time electron bombardment knocks loose gas impurities from the anode. The removal

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of gas impurities from the system stabilizes the emission and thus is an aging process.

This is particularly so with the process of Itoh et al, which is disclosed at column 6, to result in a significantly longer life of the display device whereas prior art gas cleaning processes which did not include repetitive "gas cleaning" and flushing failed to result in

improved life of the display (column 2, lines 17-42). Itoh et al, column 7, lines 28-35,

further teach substituting argon gas for the hydrogen gas. Itoh et al differs from claim

126, in that the partial pressure of water vapor in the purging gas was not disclosed and

differs from claim 112 in that a plurality of aging steps in which a gas discharge is

produced are claimed such that the gas flushing is conducted between the aging step.

It would have been obvious to one of ordinary skill in the art at the time of applicant's

invention to have employed a dry argon atmosphere with the partial pressure of steam

being less than 15 torr since trace amounts of water vapor of is a well known gas

contaminate of display devices which should be removed. Since applicant has argued

that water vapor at a partial pressure of 15 torr is not disclosed by Inoue to be a harmful

contaminant, the examiner herein cites Ahearn to support his notice that it was a well-

known contaminant. Such non-contaminant containing gases are well known in the art,

See MacNair, column 3, lines 37-42. It would make no sense to reintroduce in the

aging step of Itoh et al the same contamination being removed. As to the step of

conducting the aging between gas flushing steps, it is first required that the atmosphere

be sufficiently flushed and evacuated such that there is no substantial damage to the

internal components by oxidation or by heavy ion bombardment. Therefore, a gas flush

must be conducted prior to aging. Also, aging is known to result in gas impurities being

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released that raise the gas pressure to a level, which may cause damage to the cathodes, by ion bombardment during the aging. Therefore a gas flush is required at least intermittently to remove any high levels of gaseous impurities that may result from aging. As to claim 126, high purity argon is a dry gas. Thus, the claimed process (including claim 126) is clearly obvious.

6. Claims 127, 129, 131-139, 141 and 143-150 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al (5,564,958), MacNair and Ahearn et al as applied above with respect to claims 112, 131 and 132, further in view of Wilson and Inoue et al. These claims require a particular gas panel construction not taught by Itoh et al and Ahearn et al. However, Inoue, columns 18 and 19, figures 10 and 22 teaches a process similar to Itoh et al wherein the particular structure is employed to facilitate gas flow through the display and to reduce cross talk between pixels. It would have been obvious to employ the same structure in Itoh et al for the same reasons. As to the use of glass as the sealing material and a barrier to prevent inward glass flow, the same would have been obvious in view of Wilson since it enables a low cost sealing material to be used while obtaining a display having a high display area relative to the dimensions of the device. As to the relative distance between adjacent partitions and between the partitions and the seal, Inoue, figure 1, shows that the number of partitions corresponds to the number of pixels from one edge to the opposite edge of a display. Since a typical display has well over several hundred pixels across, the headspace certainly must be greater than the space between to partitions to facilitate smooth uniform gas flow. Note the common radiator structure.

Response to arguments


7. Applicants' arguments filed June 16, 2003 have been fully considered but they are not persuasive. Applicants argue that claim 128 depends from process claim 112. Although this claim depends from claim 112, the process of aging does not comprise the claim subject matter of product-by-process claim 128, which is directed solely to the product. Claim 128 is thus not a true dependant claim but instead is partly independent in its scope since it can be made by other processes; thus to perform the process steps of claim 112 is not required to infringe the claims. Instead claim 128 refers back to a process claim to incorporate a structure corresponding to the product made by method of the base claims but not to incorporate the exact process steps which are employed to make the product. Such a claim structure had originally been limited by the Patent Office to facilitate the claiming of structure that was otherwise difficult to describe in words. In the early stages of the practice, a product-by-process claim would be rejected as improper if it the applicant could arguably recite the same structure without resort to the recitation of the process of manufacture. Also a "dependent" product by process claim would be rejected as improper if the claim could be infringed without infringing the base process claim. However, both rejections were later stopped as the courts did not support such rejections, but since the courts recognized that the product-by-process claim structure was directed solely to the product and not to the process, the practice was continued for the reason that it allowed applicants to claim structure not otherwise definable by words.

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8. Applicant quotes Inoue, column 8, lines 34-40 which notes that the step of discharging electrodes in the display panel, i.e., aging, allows the evacuation and gas introduction to be shortened compared to the "prior art" and thus contend that Inoue is not directed to an "extended aging process". However, the term "shortened" is a relative term. There is no indication that the claimed aging process lasts longer than the process of Inoue and the claims in fact do not specify any time limitation. Therefore, applicants' arguments are not commensurate with the scope of the claims and fail to show any unobvious difference between the claimed invention and Inoue as modified. Moreover, it is well known that aging will not remove all contamination in a timely manner and that aging must be terminated at a suitable time based upon the requirements of the user and the costs of the process. Thus getters were included in display devices to capture additional out gassing subsequent to the final seal. The determination of the suitable time period for aging thus merely involves routine and obvious engineering.

Conclusion

Technical inquiries concerning this communication should be directed to Kenneth J. Ramsey, (703) 308-2324 (voice), (703) 746-4832 (fax).


KENNETH J. RAMSEY
PRIMARY EXAMINER